The Journal of Cell Biology

Volume 163 | No. 1
October 13, 2003

– News –

In This Issue

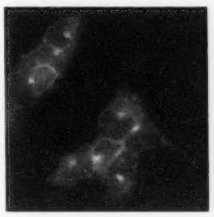
- Heparin sustains the brain 10
- Recycling endosomes: good for the furrow environment
- To kill a brain cell
- Integrin is on uPAR to unleash cells
- Choreographing telomeres

N. LeBrasseur

Research Roundup

- One crossover is enough 12
- The sex–love connection
- Prions by activation not amyloid
- Neurons that swell
- Ready to replicate? So vesiculate!

W.A. Wells



On the Cover

BACE1 (red) cleavage of APP into fragments that can lead to plaque formation is prevented by heparan sulfate (green). See page 97.

– Research Articles –

Reports

***H2AX* regulates meiotic telomere clustering** 15

O. Fernandez-Capetillo, B. Liebe, H. Scherthan, and A. Nussenzweig

Cdc48p is required for the cell cycle commitment point at Start via degradation of the G1-CDK inhibitor Far1p 21

X. Fu, C. Ng, D. Feng, and C. Liang

APP-BP1 mediates APP-induced apoptosis and DNA synthesis and is increased in Alzheimer's disease brain 27

Y. Chen, W. Liu, D.L. McPhie, L. Hassinger, and R.L. Neve

Articles

Ligand crowding at a nascent signal sequence 35

G. Eisner, H.-G. Koch, K. Beck, J. Brunner, and M. Müller

AIP is a mitochondrial import mediator that binds to both import receptor Tom20 and preproteins 45

M. Yano, K. Terada, and M. Mori

A role for Yip1p in COPII vesicle biogenesis 57

M. Heidtman, C.Z. Chen, R.N. Collins, and C. Barlowe

Articles with related stories in the *In This Issue* section have page numbers in red.

Articles (cont.)

Identification of a novel antiapoptotic protein that antagonizes ASK1 and CAD activities 71

S.-G. Cho, J.W. Kim, Y.H. Lee, H.S. Hwang, M.-S. Kim, K. Ryoo, M.J. Kim, K.T. Noh, E.K. Kim, J.-H. Cho, K.W. Yoon, E.-G. Cho, H.-S. Park, S.W. Chi, M.-J. Lee, S.S. Kang, H. Ichijo, and E.-J. Choi

APP processing is regulated by cytoplasmic phosphorylation 83

M.-S. Lee, S.-C. Kao, C.A. Lemere, W. Xia, H.-C. Tseng, Y. Zhou, R. Neve, M.K. Ahlijanian, and L.-H. Tsai

Heparan sulfate regulates amyloid precursor protein processing by BACE1, the Alzheimer's β-secretase 97

Z. Scholefield, E.A. Yates, G. Wayne, A. Amour, W. McDowell, and J.E. Turnbull

Huntingtin forms toxic NH_2-terminal fragment complexes that are promoted by the age-dependent decrease in proteasome activity 109

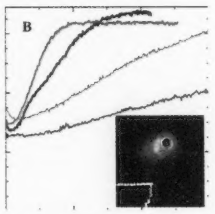
H. Zhou, F. Cao, Z. Wang, Z.-X. Yu, H.-P. Nguyen, J. Evans, S.-H. Li, and X.-J. Li

Skeletal myosin heavy chain function in cultured lung myofibroblasts 119

N.A. Rice and L.A. Leinwand

How VASP enhances actin-based motility 131

S. Samarin, S. Romero, C. Kocks, D. Didry, D. Pantaloni, and M.-F. Carlier



Contractility of lung myofibroblasts depends on skeletal myosin heavy chain (red). See page 119.

VASP (thick lines) increases Arp2/3-based actin polymerization by speeding the release of ActA from growing filaments. See page 131.

Actin cytoskeleton remodeling during early *Drosophila* furrow formation requires recycling endosomal components Nuclear-fallout and Rab11 143

B. Riggs, W. Rothwell, S. Mische, G.R.X. Hickson, J. Matheson, T.S. Hays, G.W. Gould, and W. Sullivan

MAL regulates clathrin-mediated endocytosis at the apical surface of Madin–Darby canine kidney cells 155

F. Martín-Belmonte, J.A. Martínez-Menárguez, J.F. Aranda, J. Ballesta, M.C. de Marco, and M.A. Alonso

CD151 regulates epithelial cell–cell adhesion through PKC- and Cdc42-dependent actin cytoskeletal reorganization 165

M. Shigeta, N. Sanzen, M. Ozawa, J. Gu, H. Hasegawa, and K. Sekiguchi

Distinct ligand binding sites in integrin α3β1 regulate matrix adhesion and cell–cell contact 177

F. Zhang, C.C. Tom, M.C. Kugler, T.-T. Ching, J.A. Kreidberg, Y. Wei, and H.A. Chapman

Additions and corrections 189

The Journal of Cell Biology

Volume 163 | No. 2
October 27, 2003

– News –

In This Issue

- Weaklings unite to reorganize cell 198
- Getting specific about polarized sorting
- An early warning system for DNA damage
- A close look at cerebellar learning
- Laminin-2 on the brain

A.W. Dove

Research Roundup

- Desmosomes in a tangle 200
- Flies fight famine
- The kinase knows
- Transcription keeps it simple
- Binding takes cooperation

N. Lebrasseur

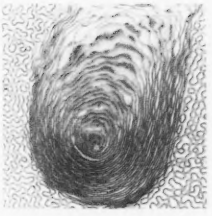
Mini-Reviews

Sorting it out: AP-2 and alternate clathrin adaptors in endocytic cargo selection 203

L.M. Traub

Lymphatic endothelium: morphological, molecular and functional properties 209

M.S. Pepper and M. Skobe



On the Cover

Formation of organized smooth endoplasmic reticulum can be induced by overexpression of a protein tagged with a weakly dimerizing GFP. See page 257.

– Research Articles –

Reports

Architecture of the budding yeast kinetochore reveals a conserved molecular core 215

S. Westermann, I.M. Cheeseman, S. Anderson, J.R. Yates III, D.G. Drubin, and G. Barnes

BPAG1n4 is essential for retrograde axonal transport in sensory neurons 223

J.-J. Liu, J. Ding, A.S. Kowal, T. Nardine, E. Allen, J.-D. Delcroix, C. Wu, W. Mobley, E. Fuchs, and Y. Yang

Clathrin promotes incorporation of cargo into coated pits by activation of the AP2 adaptor μ2 kinase 231

A.P. Jackson, A. Flett, C. Smythe, L. Hufton, F.R. Wettey, and E. Smythe

Vps27-Hse1 and ESCRT-I complexes cooperate to increase efficiency of sorting ubiquitinated proteins at the endosome 237

P.S. Bilodeau, S.C. Winistorfer, W.R. Kearney, A.D. Robertson, and R.C. Piper

Articles

DNA damage-induced replication arrest in *Xenopus* egg extracts 245

M.P. Stokes and W.M. Michael

Formation of stacked ER cisternae by low affinity protein interactions 257

E.L. Snapp, R.S. Hegde, M. Francolini, F. Lombardo, S. Colombo, E. Pedrazzini, N. Borgese, and J. Lippincott-Schwartz

Articles with related stories in the *In This Issue* section have page numbers in red; articles with *Mini-Reviews* have page numbers in blue.

Articles (cont.)

NAADP mobilizes Ca^{2+} from a thapsigargin-sensitive store in the nuclear envelope by activating ryanodine receptors 271

J.V. Gerasimenko, Y. Maruyama, K. Yano, N.J. Dolman, A.V. Tepikin, O.H. Petersen, and O.V. Gerasimenko

Herpes simplex virus triggers activation of calcium-signaling pathways 283

N. Cheshenko, B. Del Rosario, C. Woda, D. Marcellino, L.M. Satlin, and B.C. Herold

Impairment of LTD and cerebellar learning by Purkinje cell–specific ablation of cGMP-dependent protein kinase I 295

R. Feil, J. Hartmann, C. Luo, W. Wolfsgruber, K. Schilling, S. Feil, J.J. Barski, M. Meyer, A. Konnerth, C.I. De Zeeuw, and F. Hofmann

Nodal-dependent Cripto signaling promotes cardiomyogenesis and redirects the neural fate of embryonic stem cells 303

S. Parisi, D. D'Andrea, C.T. Lago, E.D. Adamson, M.G. Persico, and G. Minchiotti

Akt activation disrupts mammary acinar architecture and enhances proliferation in an mTOR-dependent manner 315

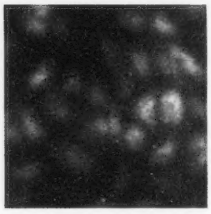
J. Debnath, S.J. Walker, and J.S. Brugge

Loss of keratin 6 (K6) proteins reveals a function for intermediate filaments during wound repair 327

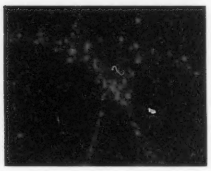
P. Wong and P.A. Coulombe

The Rab8 GTPase selectively regulates AP-1B–dependent basolateral transport in polarized Madin-Darby canine kidney cells 339

A.L. Ang, H. Fölsch, U.-M. Koivisto, M. Pypaert, and I. Mellman



Entry of Herpes simplex virus induces transient release of calcium from ER stores. See page 283.



Internalization of the neurotrophin–TrkB complex requires neuronal activity leading to increased activity of the TrkB tyrosine kinase. See page 385.

The AP-1A and AP-1B clathrin adaptor complexes define biochemically and functionally distinct membrane domains 351

H. Fölsch, M. Pypaert, S. Maday, L. Pelletier, and I. Mellman

A dual-functional paramyxovirus F protein regulatory switch segment: activation and membrane fusion 363

C.J. Russell, K.L. Kantor, T.S. Jardetzky, and R.A. Lamb

Role of the pleckstrin homology domain of PLCγ1 in its interaction with the insulin receptor 375

Y.-K. Kwon, H.-J. Jang, S. Kole, H.-J. He, and M. Bernier

Regulation of TrkB receptor tyrosine kinase and its internalization by neuronal activity and Ca^{2+} influx 385

J. Du, L. Feng, E. Zaitsev, H.-S. Je, X.-w. Liu, and B. Lu

Integrin-linked kinase is required for laminin-2–induced oligodendrocyte cell spreading and CNS myelination 397

S.J Chun, M.N. Rasband, R.L. Sidman, A.A. Habib, and T. Vartanian

Talin1 is critical for force-dependent reinforcement of initial integrin–cytoskeleton bonds but not tyrosine kinase activation 409

G. Giannone, G. Jiang, D.H. Sutton, D.R. Critchley, and M.P. Sheetz

Additions and corrections 421

The Journal of Cell Biology

Volume 163 | No. 3
November 10, 2003

– News –

In This Issue

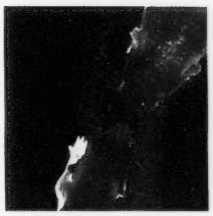
- BMP in a hairy situation 432
- ROCK and Rho in 3D
- Where mtDNA is made
- Forcing cells to stick around
- Quick cartilage transformation

N. LeBrasseur

Research Roundup

- Passing along polarity 434
- A kinase that activates by occupancy
- How to renew a stem cell
- Latching onto fibrinogen
- Damage first; infect later

W.A. Wells



On the Cover

Loss of BMP signaling (green) in the skin epithelium blocks hair cell differentiation, resulting in hairless mice (bottom). See page 609.

– Reviews –

Comments

Traffic control: p120-catenin acts as a gatekeeper to control the fate of classical cadherins in mammalian cells 437

M. Peifer and A.S. Yap

Calcium mobilization from mitochondria in synaptic transmitter release 441

R. Rizzuto

Mini-Reviews

Myosin V motor proteins: marching stepwise towards a mechanism 445

R.D. Vale

Articles with related stories in the *In This Issue* section have page numbers in red; articles with *Comments* have page numbers in blue.

– Research Articles –

Reports

Morphologically distinct microtubule ends in the mitotic centrosome of *Caenorhabditis elegans* 451

E.T. O'Toole, K.L. McDonald, J. Mäntler, J.R. McIntosh, A.A. Hyman, and T. Müller-Reichert

A function for the mitochondrial chaperonin Hsp60 in the structure and transmission of mitochondrial DNA nucleoids in *Saccharomyces cerevisiae* 457

B.A. Kaufman, J.E. Kolesar, P.S. Perlman, and R.A. Butow

Cloning of the first sn1-DAG lipases points to the spatial and temporal regulation of endocannabinoid signaling in the brain 463

T. Bisogno, F. Howell, G. Williams, A. Minassi, M.G. Cascio, A. Ligresti, I. Matias, A. Schiano-Moriello, P. Paul, E.-J. Williams, U. Gangadharan, C. Hobbs, V. Di Marzo, and P. Doherty

Mice with defects in HB-EGF ectodomain shedding show severe developmental abnormalities 469

S. Yamazaki, R. Iwamoto, K. Saeki, M. Asakura, S. Takashima, A. Yamazaki, R. Kimura, H. Mizushima, H. Moribe, S. Higashiyama, M. Endoh, Y. Kaneda, S. Takagi, S. Itami, N. Takeda, G. Yamada, and E. Mekada

Articles

SUMO-2/3 regulates topoisomerase II in mitosis 477

Y. Azuma, A. Arnaoutov, and M. Dasso

Articles (cont.)

Proteolytic release of the carboxy-terminal fragment of proHB-EGF causes nuclear export of PLZF 489

D. Nanba, A. Mammoto, K. Hashimoto, and S. Higashiyama

Evidence for a two membrane–spanning autonomous mitochondrial DNA replisome 503

S. Meeusen and J. Nunnari

Ca^{2+} influx–independent synaptic potentiation mediated by mitochondrial Na^{+}-Ca^{2+} exchanger and protein kinase C 511

F. Yang, X.-p. He, J. Russell, and B. Lu

A core function for p120-catenin in cadherin turnover 525

M.A. Davis, R.C. Ireton, and A.B. Reynolds

Cellular levels of p120 catenin function as a set point for cadherin expression levels in microvascular endothelial cells 535

K. Xiao, D.F. Allison, K.M. Buckley, M.D. Kottke, P.A. Vincent, V. Faundez, and A.P. Kowalczyk

p120 catenin associates with kinesin and facilitates the transport of cadherin–catenin complexes to intercellular junctions 547

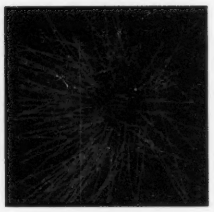
X. Chen, S.-i. Kojima, G.G. Borisy, and K.J. Green

Rab27A and its effector MyRIP link secretory granules to F-actin and control their motion towards release sites 559

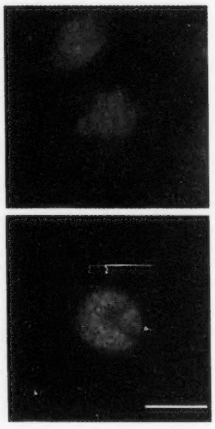
C. Desnos, J.-S. Schonn, S. Huet, V.S. Tran, A. El-Amraoui, G. Raposo, I. Fanget, C. Chapuis, G. Ménasché, G. de Saint Basile, C. Petit, S. Cribier, J.-P. Henry, and F. Darchen

p190RhoGAP is cell cycle regulated and affects cytokinesis 571

L. Su, Joyce M. Agati, and S.J. Parsons



Most microtubules (red) at the centrosome have closed and pointed minus ends (green), but some have open minus ends (purple). End structure may be related to microtubule dynamics. See page 451.



After proteolysis (bottom) of membrane-bound proHB-EGF, the C-terminal region (green) enters the nucleus (red), where it causes the export of the PLZF transcriptional repressor, thus promoting cell cycle progression. See page 489.

ROCK-generated contractility regulates breast epithelial cell differentiation in response to the physical properties of a three-dimensional collagen matrix 583

M.A. Wozniak, R. Desai, P.A. Solski, C.J. Der, and P.J. Keely

Defective flagellar assembly and length regulation in *LF3* null mutants in *Chlamydomonas* 597

L.-W. Tam, W.L. Dentler, and P.A. Lefebvre

Defining BMP functions in the hair follicle by conditional ablation of BMP receptor IA 609

K. Kobielak, H.A. Pasolli, L. Alonso, L. Polak, and E. Fuchs

Processing by proprotein convertases is required for glypican-3 modulation of cell survival, Wnt signaling, and gastrulation movements 625

B. De Cat, S.-Y. Muyldermans, C. Coomans, G. Degeest, B. Vanderschueren, J. Creemers, F. Biemar, B. Peers, and G. David

Spatial and temporal expression of heparan sulfate in mouse development regulates FGF and FGF receptor assembly 637

B.L. Allen and A.C. Rapraeger

Avidity enhancement of L-selectin bonds by flow: shear-promoted rotation of leukocytes turn labile bonds into functional tethers 649

O. Dwir, A. Solomon, S. Mangan, G.S. Kansas, U.S. Schwarz, and R. Alon

MT1-MMP–dependent, apoptotic remodeling of unmineralized cartilage: a critical process in skeletal growth 661

K. Holmbeck, P. Bianco, K. Chrysovergis, S. Yamada, H. Birkedal-Hansen

Additions and corrections 673

Additions and corrections 675

The Journal of Cell Biology

Volume 163 | No. 4
November 24, 2003

– News –

In This Issue

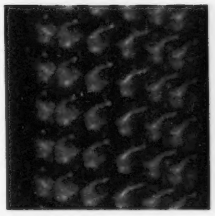
- Held back by a finger 688
- Cautious apoptosis
- A disease of actin transport?
- Notch gets transformed
- Barriers to export

W.A. Wells

Research Roundup

- Tearing down the spindle 690
- Receptors make a quick exit
- Immune cells take in unknown enemies
- Fold me or leave me
- Fusion gets in the groove

N. LeBrasseur



On the Cover

The Unc104 kinesin (red) is monomeric when two helices form a finger-like projection. Perhaps only when this structure unravels can Unc104 dimerization and motility along microtubules (blue) occur. See pages 693 and 743.

– Reviews –

Comments

Breathing down the neck of Unc104 693

L. Wordeman

Cdk5 and the mystery of synaptic vesicle endocytosis 697

C. Nguyen and J.A. Bibb

Articles with related stories in the *In This Issue* section have page numbers in red; articles with *Comments* have page numbers in blue.

– Research Articles –

Reports

The *Drosophila* nucleoporin DNup88 localizes DNup214 and CRM1 on the nuclear envelope and attenuates NES-mediated nuclear export 701

P. Roth, N. Xylourgidis, N. Sabri, A. Uv, M. Fornerod, and C. Samakovlis

A J-protein is an essential subunit of the presequence translocase–associated protein import motor of mitochondria 707

K.N. Truscott, W. Voos, A.E. Frazier, M. Lind, Y. Li, A. Geissler, J. Dudek, H. Müller, A. Sickmann, H.E. Meyer, C. Meisinger, B. Guiard, P. Rehling, and N. Pfanner

Dynamics and calcium sensitivity of the Ca^{2+}/myristoyl switch protein hippocalcin in living cells 715

D.W. O'Callaghan, A.V. Tepikin, and R.D. Burgoyne

Cross-talk between the Notch and TGF-β signaling pathways mediated by interaction of the Notch intracellular domain with Smad3 723

A. Blokzijl, C. Dahlqvist, E. Reissmann, A. Falk, A. Moliner, U. Lendahl, and C.F. Ibáñez

Articles

Pds5p regulates the maintenance of sister chromatid cohesion and is sumoylated to promote the dissolution of cohesion 729

K. Stead, C. Aguilar, T. Hartman, M. Drexel, P. Meluh, and V. Guacci

Articles (cont.)

Distinct conformations of the kinesin Unc104 neck regulate a monomer to dimer motor transition 743

J. Al-Bassam, Y. Cui, D. Klopfenstein, B.O. Carragher, R.D. Vale, and R.A. Milligan

Mammalian GGAs act together to sort mannose 6-phosphate receptors 755

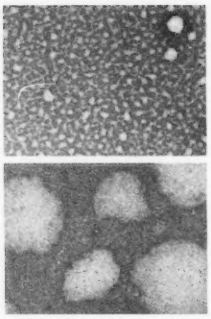
P. Ghosh, J. Griffith, H.J. Geuze, and S. Kornfeld

Inhibition of a constitutive translation initiation factor 2α phosphatase, *CReP*, promotes survival of stressed cells 767

C. Jousse, S. Oyadomari, I. Novoa, P. Lu, Y. Zhang, H.P. Harding, and D. Ron

Loss of m-AAA protease in mitochondria causes complex I deficiency and increased sensitivity to oxidative stress in hereditary spastic paraplegia 777

L. Atorino, L. Silvestri, M. Koppen, L. Cassina, A. Ballabio, R. Marconi, T. Langer, and G. Casari



Dynamin and amphiphysin can vesiculate liposomes (top), but Cdk5 phosphorylates them and thus inhibits both this vesiculation activity (bottom) and endocytosis. See pages 697 and 813.

Critical function of endogenous XIAP in regulating caspase activation during sympathetic neuronal apoptosis 789

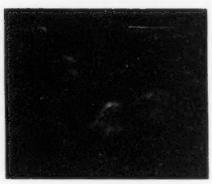
P.R. Potts, S. Singh, M. Knezek, C.B. Thompson, and M. Deshmukh

Smn, the spinal muscular atrophy–determining gene product, modulates axon growth and localization of β-actin mRNA in growth cones of motoneurons 801

W. Rossoll, S. Jablonka, C. Andreassi, A.-K. Kröning, K. Karle, U.R. Monani, and M. Sendtner

Cophosphorylation of amphiphysin I and dynamin I by Cdk5 regulates clathrin-mediated endocytosis of synaptic vesicles 813

K. Tomizawa, S. Sunada, Y.-F. Lu, Y. Oda, M. Kinuta, T. Ohshima, T. Saito, F.-Y. Wei, M. Matsushita, S.-T. Li, K. Tsutsui, S.-i. Hisanaga, K. Mikoshiba, K. Takei, and H. Matsui



Nucleolin (red) is expressed on the surface of endothelial cells in angiogenic blood vessels (green) of tumors. See page 871.

S100C/A11 is a key mediator of Ca^{2+}-induced growth inhibition of human epidermal keratinocytes 825

M. Sakaguchi, M. Miyazaki, M. Takaishi, Y. Sakaguchi, E. Makino, N. Kataoka, H. Yamada, M. Namba, and N.-h. Huh

Spatio-temporal propagation of Ca^{2+} signals by cyclic ADP-ribose in 3T3 cells stimulated via purinergic P2Y receptors 837

S. Bruzzone, S. Kunerth, E. Zocchi, A. De Flora, and A.H. Guse

Autoregulation of E-cadherin expression by cadherin–cadherin interactions: the roles of β-catenin signaling, Slug, and MAPK 847

M. Conacci-Sorrell, I. Simcha, T. Ben-Yedidia, J. Blechman, P. Savagner, and A. Ben-Ze'ev

The stromal cell–derived factor-1α/CXCR4 ligand–receptor axis is critical for progenitor survival and migration in the pancreas 859

A.G. Kayali, K.V. Gunst, I.L. Campbell, A. Stotland, M. Kritzik, G. Liu, M. Flodström-Tullberg, Y.-Q. Zhang, and N. Sarvetnick

Nucleolin expressed at the cell surface is a marker of endothelial cells in angiogenic blood vessels 871

S. Christian, J. Pilch, M.E. Akerman, K. Porkka, P. Laakkonen, and E. Ruoslahti

Differently anchored influenza hemagglutinin mutants display distinct interaction dynamics with mutual rafts 879

D.E. Shvartsman, M. Kotler, R.D. Tall, M.G. Roth, and Y.I. Henis

Laminin γ1 is critical for Schwann cell differentiation, axon myelination, and regeneration in the peripheral nerve 889

Z.-L. Chen and S. Strickland

Loss of proteolytically processed filaggrin caused by epidermal deletion of Matriptase/MT-SP1 901

K. List, R. Szabo, P.W. Wertz, J. Segre, C.C. Haudenschild, S.-Y. Kim, and T.H. Bugge

The Journal of Cell Biology

Volume 163 | No. 5
December 8, 2003

– News –

In This Issue

- Fewer phosphates but fatter axons 926
- The APC–tumor connection
- Neurons die one way or another
- Fusion fuels killing
- Tearing down actin

N. LeBrasseur

Research Roundup

- Managing tension 928
- Civil war in the immune system
- Catenin keeps vesicles close
- S is for sticky
- Worms delay in deep sleep

W.A. Wells

On the Cover

The *Salmonella* protein SipB kills macrophages by inducing the engulfment of organelles, such as the mitochondrion seen here, in membranous vesicles. See page 1123.

– Research Articles –

Reports

IGF-II transcription in skeletal myogenesis is controlled by mTOR and nutrients 931

E. Erbay, I.-H. Park, P.D. Nuzzi, C.J. Schoenherr, and J. Chen

Articles

Meiotic condensin is required for proper chromosome compaction, SC assembly, and resolution of recombination-dependent chromosome linkages 937

H.-G. Yu and D.E. Koshland

Chromosome instability in colorectal tumor cells is associated with defects in microtubule plus-end attachments caused by a dominant mutation in *APC* 949

R.A. Green and K.B. Kaplan

Regulation of Kinl kinesin ATPase activity by binding to the microtubule lattice 963

C.A. Moores, M. Hekmat-Nejad, R. Sakowicz, and R.A. Milligan

Yeast homotypic vacuole fusion requires the Ccz1–Mon1 complex during the tethering/docking stage 973

C.-W. Wang, P.E. Stromhaug, E.J. Kauffman, L.S. Weisman, and D.J. Klionsky

GDNF-deprived sympathetic neurons die via a novel nonmitochondrial pathway 987

L.-Y. Yu, E. Jokitalo, Y.-F. Sun, P. Mehlen, D. Lindholm, M. Saarma, and U. Arumäe

Articles with related stories in the *In This Issue* section have page numbers in red.

Articles (cont.)

SHP-1 negatively regulates neuronal survival by functioning as a TrkA phosphatase 999

H.N. Marsh, C.I. Dubreuil, C. Quevedo, A. Lee, M. Majdan, G.S. Walsh, S. Hausdorff, F.A. Said, O. Zoueva, M. Kozlowski, K. Siminovitch, B.G. Neel, F.D. Miller, and D.R. Kaplan

NF-M is an essential target for the myelin-directed "outside-in" signaling cascade that mediates radial axonal growth 1011

M.L. Garcia, C.S. Lobsiger, S.B. Shah, T.J. Deerinck, J. Crum, D. Young, C.M. Ward, T.O. Crawford, T. Gotow, Y. Uchiyama, M.H. Ellisman, N.A. Calcutt, and D.W. Cleveland

The neurofilament middle molecular mass subunit carboxyl-terminal tail domains is essential for the radial growth and cytoskeletal architecture of axons but not for regulating neurofilament transport rate 1021

M.V. Rao, J. Campbell, A. Yuan, A. Kumar, T. Gotow, Y. Uchiyama, and R.A. Nixon

Aberrant myofibril assembly in tropomodulin1 null mice leads to aborted heart development and embryonic lethality 1033

K.L. Fritz-Six, P.R. Cox, R.S. Fischer, B. Xu, C.C. Gregorio, H.Y. Zoghbi, and V.M. Fowler

Espin cross-links cause the elongation of microvillus-type parallel actin bundles in vivo 1045

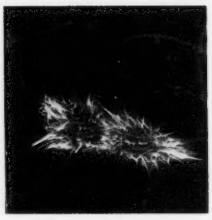
P.A. Loomis, L. Zheng, G. Sekerková, B. Changyaleket, E. Mugnaini, and J.R. Bartles

ADF/cofilin use an intrinsic mode of F-actin instability to disrupt actin filaments 1057

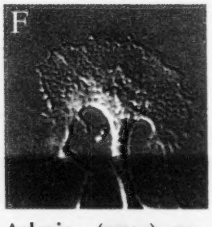
V.E. Galkin, A. Orlova, M.S. VanLoock, A. Shvetsov, E. Reisler, and E.H. Egelman

Small GTPase Rin induces neurite outgrowth through Rac/Cdc42 and calmodulin in PC12 cells 1067

M. Hoshino and S. Nakamura



Epsin (green) lengthens microvilli by promoting barbed-end elongation of actin filaments (red). See page 1045.



Ankyrin$_B$ (green) promotes neurite initiation by transmitting traction forces from F-actin flow to the extracellular substrate via L1-CAM. See page 1077.

L1-dependent neuritogenesis involves ankyrin$_B$ that mediates L1-CAM coupling with retrograde actin flow 1077

K. Nishimura, F. Yoshihara, T. Tojima, N. Ooashi, W. Yoon, K. Mikoshiba, V. Bennett, and H. Kamiguchi

***Drosophila* aPKC regulates cell polarity and cell proliferation in neuroblasts and epithelia** 1089

M.M. Rolls, R. Albertson, H.-P. Shih, C.-Y. Lee, and C.Q. Doe

Reversed polarized delivery of an aquaporin-2 mutant causes dominant nephrogenic diabetes insipidus 1099

E.-J. Kamsteeg, D.G. Bichet, I.B.M. Konings, H. Nivet, M. Lonergan, M.-Françoise Arthus, C.H. van Os, and P.M.T. Deen

ARF6 controls post-endocytic recycling through its downstream exocyst complex effector 1111

M. Prigent, T. Dubois, G. Raposo, V. Derrien, D. Tenza, C. Rossé, J. Camonis, and P. Chavrier

A *Salmonella* protein causes macrophage cell death by inducing autophagy 1123

L.D. Hernandez, M. Pypaert, R.A. Flavell, and J.E. Galán

Satellite cells attract monocytes and use macrophages as a support to escape apoptosis and enhance muscle growth 1133

B. Chazaud, C. Sonnet, P. Lafuste, G. Bassez, A.-C. Rimaniol, F. Poron, F.-J. Authier, P.A. Dreyfus, and R.K. Gherardi

Peritoneal macrophages express both P-selectin and PSGL-1 1145

B. Tchernychev, B. Furie, and B.C. Furie

The ubiquitin-related protein PLIC-1 regulates heterotrimeric G protein function through association with Gβγ 1157

E.-N. N'Diaye and E.J. Brown

EWI-2 regulates α3β1 integrin–dependent cell functions on laminin-5 1167

C.S. Stipp, T.V. Kolesnikova, and M.E. Hemler

The Journal of Cell Biology

Volume 163 | No. 6
December 22, 2003

– News –

In This Issue

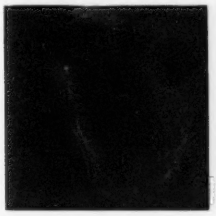
- Math models morphogenesis and mitosis 1184
- Cup puts a lid and a handle on mRNA
- Cells need backward motor to move forward
- Death and the shrinking nucleus
- Neural progenitors find VEGF attractive

A.W. Dove

Research Roundup

- Transcribed in synchronicity 1186
- Auxin auxin everywhere
- Eggs never forget
- Calcium makes a fast getaway
- Knocked down a Notch with age

N. LeBrasseur



On the Cover

Dynein (red) is needed at the leading edge of migrating cells to promote forward movement. See page 1205.

– Reviews –

Comments

Cup-ling *oskar* RNA localization and translational control 1189

P. Lasko

Myosin V and the endoplasmic reticulum: the connection grows 1193

W. Wagner and J.A. Hammer III

Articles with related stories in the *In This Issue* section have page numbers in red; articles with *Comments* have page numbers in blue.

– Research Articles –

Reports

Cup is an eIF4E binding protein required for both the translational repression of oskar and the recruitment of Barentsz 1197

J.E. Wilhelm, M. Hilton, Q. Amos, and W.J. Henzel

A role for cytoplasmic dynein and LIS1 in directed cell movement 1205

D.L. Dujardin, L.E. Barnhart, S.A. Stehman, E.R. Gomes, G.G. Gundersen, and R.B. Vallee

Caspr regulates the processing of contactin and inhibits its binding to neurofascin 1213

L. Gollan, D. Salomon, J.L. Salzer, and E. Peles

Articles

PLA_2 activity is required for nuclear shrinkage in caspase-independent cell death 1219

K. Shinzawa and Y. Tsujimoto

Spindle checkpoint proteins Mad1 and Mad2 are required for cytostatic factor–mediated metaphase arrest 1231

B.J. Tunquist, P.A. Eyers, L.G. Chen, A.L. Lewellyn, and J.L. Maller

Mathematical model of the morphogenesis checkpoint in budding yeast 1243

A. Ciliberto, B. Novak, and J.J. Tyson

Myo4p and She3p are required for cortical ER inheritance in *Saccharomyces cerevisiae* 1255

P. Estrada, J. Kim, J. Coleman, L. Walker, B. Dunn, P. Takizawa, P. Novick, and S. Ferro-Novick

Articles (cont.)

Balancing different types of actin polymerization at distinct sites: roles for Abelson kinase and Enabled 1267

E.E. Grevengoed, D.T. Fox, J. Gates, and M. Peifer

Recognition of dileucine-based sorting signals from HIV-1 Nef and LIMP-II by the AP-1 γ–σ1 and AP-3 δ–σ3 hemicomplexes 1281

K. Janvier, Y. Kato, M. Boehm, J.R. Rose, J.A. Martina, B.-Y. Kim, S. Venkatesan, and J.S. Bonifacino

TGFβ$_3$ signaling activates transcription of the LEF1 gene to induce epithelial mesenchymal transformation during mouse palate development 1291

A. Nawshad and E.D. Hay

TGF-β receptor kinase inhibitor enhances growth and integrity of embryonic stem cell–derived endothelial cells 1303

T. Watabe, A. Nishihara, K. Mishima, J. Yamashita, K. Shimizu, K. Miyazawa, S.-I. Nishikawa, and K. Miyazono

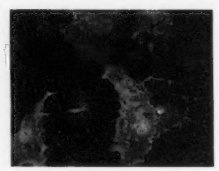
Multiple EphB receptor tyrosine kinases shape dendritic spines in the hippocampus 1313

M. Henkemeyer, O.S. Itkis, M. Ngo, P.W. Hickmott, and I.M. Ethell

Isoform-specific insulin receptor signaling involves different plasma membrane domains 1327

S. Uhles, T. Moede, B. Leibiger, P.-O. Berggren, and I.B. Leibiger

Mutation of Abl disrupts localization of actin (green) to pseudocleavage furrows during fly embryogenesis, resulting in the collision of adjacent mitotic spindles. See page 1267.



NF155 (red) only binds where Caspr (green) is not present to inhibit contactin processing. See page 1213.

Tyrosine phosphorylation of type Iγ phosphatidylinositol phosphate kinase by Src regulates an integrin–talin switch 1339

K. Ling, R.L. Doughman, V.V. Iyer, A.J. Firestone, S.F. Bairstow, D.F. Mosher, M.D. Schaller, and R.A. Anderson

α3β1 integrin–CD151, a component of the cadherin–catenin complex, regulates PTPμ expression and cell–cell adhesion 1351

N. Chattopadhyay, Z. Wang, L.K. Ashman, S.M. Brady-Kalnay, and J.A. Kreidberg

Latent TGF-β binding protein LTBP-2 decreases fibroblast adhesion to fibronectin 1363

M. Hyytiäinen and J. Keski-Oja

VEGF is a chemoattractant for FGF-2–stimulated neural progenitors 1375

H. Zhang, L. Vutskits, M.S. Pepper, and J.Z. Kiss

Signal-dependent distribution of cell surface P-selectin in clathrin-coated pits affects leukocyte rolling under flow 1385

H. Setiadi and R.P. McEver

Autocrine laminin-5 ligates α6β4 integrin and activates RAC and NFκB to mediate anchorage-independent survival of mammary tumors 1397

N. Zahir, J.N. Lakins, A. Russell, W.Y. Ming, C. Chatterjee, G.I. Rozenberg, M.P. Marinkovich, and V.M. Weaver